

## AMENDMENT AND RESPONSE UNDER 37 CFR § 1.111

Serial Number: 09/961034

Filing Date: September 21, 2001

Title: COPPER-CONTAINING C4 BALL-LIMITING METALLURGY STACK FOR ENHANCED RELIABILITY OF PACKAGED STRUCTURES AND METHOD OF MAKING SAME

Assignee: Intel Corporation

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Dkt: 884.522US1 (INTEL)

**IN THE CLAIMS**

Please cancel claims 3-9, 23-28, 30-33, and 36-39.

Please amend the claims as follows:

1. (Currently Amended) A ball-limiting metallurgy (BLM) stack comprising:  
a metal adhesion first layer disposed above and on a metallization;  
a metal second layer disposed above and on the metal adhesion first layer;  
a metal third layer disposed above and on the metal second layer;  
an electrically conductive bump disposed above and on the metal third layer; and  
wherein the metal second layer comprises a copper layer and wherein the metal third layer comprises a copper stud wherein at least one of the metal second layer and the metal third layer comprises copper.
2. (Original) The BLM stack according to claim 1, wherein the metal adhesion first layer is selected from Ti, TiW, W, and Cr.
- 3-9. (Cancelled)
10. (Original) The BLM stack according to claim 1, further comprising:  
an intermetallic layer disposed between the metallization and the electrically conductive bump.
11. (Original) The BLM stack according to claim 1, wherein the electrically conductive bump comprises a tin-lead solder composition selected from Sn37Pb, Sn97Pb, and Sn<sub>x</sub>Pb<sub>y</sub>, wherein x+y total 1 and wherein x is in a range from about 0.3 to about 0.99.
- 12-28. (Cancelled)

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29. (Previously Added) The BLM stack according to claim 1, wherein the metal adhesion first layer includes a Ti composition, wherein the Ti composition has a thickness in a range from about 500 Å to about 4,000 Å.

30-33. (Cancelled)

34. (Previously Added) The BLM stack according to claim 1, wherein the metal third layer includes a copper stud over the metal second layer, wherein the copper stud has a thickness in a range from about 5 micrometers to about 15 micrometers.

35. (Previously Added) The BLM stack according to claim 1, wherein the metal third layer includes a copper stud over the metal second layer, wherein the copper stud has a thickness in a range from about 5 micrometers to about 15 micrometers, and wherein the metal second layer has a thickness in a range from about 1,000 Å to about 5,000 Å.

36-39. (Cancelled)